

Supplementary Information

An assessment of the Dietary Bioavailability of Silver Nanomaterials in Rainbow Trout Using an Ex Vivo Gut Sac Technique

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Table S1. The moisture content, fluid flux and total Ag accumulation rates of all AgNO₃, Ag NPs and Ag₂S NPs into the mucosa, either in the chloride-containing or chloride-free saline.

	Control	AgNO ₃	Ag NPs	Ag ₂ S NPs
Moisture (%)				
<u>Chloride-containing</u>				
Oesophagus	78.2 ± 1.1	77.4 ± 2.3	80.0 ± 1.7	80.1 ± 0.8
Stomach	80.7 ± 1.3	81.2 ± 0.8	80.5 ± 0.5	80.5 ± 0.7
Anterior	76.9 ± 1.5	76.2 ± 1.5	75.9 ± 1.7	74.8 ± 2.5
Mid intestine	80.9 ± 1.8	81.8 ± 1.7	79.9 ± 1.7	83.0 ± 1.7
Hind intestine	81.0 ± 1.8	82.3 ± 1.7	81.8 ± 1.3	81.7 ± 1.4
<u>Chloride-free</u>				
Oesophagus	78.5 ± 1.4	80.5 ± 1.0	80.2 ± 1.6	N/A
Stomach	80.2 ± 0.5	82.1 ± 1.2	80.1 ± 0.8	N/A
Anterior	73.9 ± 2.2	74.7 ± 2.2	69.7 ± 1.8	N/A
Mid intestine	78.0 ± 3.1	80.4 ± 2.0	81.5 ± 1.8	N/A
Hind intestine	83.0 ± 2.1	78.6 ± 5.9	79.1 ± 3.4	N/A
Fluid flux (μL cm⁻² h⁻¹)				
<u>Chloride-containing</u>				
Oesophagus	1.37 ± 2.39	-1.06 ± 0.85	3.06 ± 1.23	-0.30 ± 1.26
Stomach	-1.46 ± 0.58	-0.76 ± 0.99	3.40 ± 2.10	-1.43 ± 0.92
Anterior	4.84 ± 4.51	1.52 ± 2.37	7.31 ± 2.71	0.78 ± 1.17
Mid intestine	0.34 ± 1.67	2.07 ± 1.23	0.70 ± 2.48	5.03 ± 1.62
Hind intestine	-2.26 ± 0.33	-1.34 ± 0.72	1.54 ± 5.05	3.55 ± 1.92
<u>Chloride-free</u>				
Oesophagus	-2.63 ± 2.32	4.41 ± 1.96	-0.57 ± 1.44	N/A
Stomach	1.63 ± 0.80	2.08 ± 0.90	1.32 ± 1.39	N/A
Anterior	0.33 ± 2.73	5.50 ± 11.82	12.13 ± 9.46	N/A
Mid intestine	-1.94 ± 0.74	-2.17 ± 0.46	-1.54 ± 0.88	N/A
Hind intestine	-2.44 ± 1.46	-3.67 ± 3.62	-4.14 ± 2.22	N/A
Accumulation rate into the mucosa (pmol cm⁻² h⁻¹)				
<u>Chloride-containing</u>				
Oesophagus	ND	5.87 ± 1.92 ^{Aa}	7.70 ± 4.92 ^{Aa}	7.02 ± 2.09 ^{Aa}
Stomach	ND	13.08 ± 4.08 ^{Aa}	4.58 ± 0.68 ^{Aa}	11.63 ± 1.09 ^{Aa}
Anterior	ND	28.04 ± 7.77 ^{Aa}	13.32 ± 3.94 ^{Aa}	12.07 ± 2.86 ^{Aa}
Mid intestine	ND	23.05 ± 5.20 ^{Aa}	8.39 ± 4.55 ^{Ba}	63.45 ± 22.44 ^{Aa}
Hind intestine	ND	19.74 ± 7.23 ^{Aa}	7.01 ± 1.99 ^{Aa}	23.66 ± 7.88 ^{Aa}
<u>Chloride-free</u>				
Oesophagus	ND	6.13 ± 3.06 ^{Aa}	1.39 ± 0.55 ^{Aa}	N/A
Stomach	ND	28.84 ± 11.49 ^{Aa}	4.58 ± 3.26 ^{Bab}	N/A
Anterior	ND	11.14 ± 2.80 ^{Aa}	5.26 ± 1.34 ^{Ab}	N/A
Mid intestine	ND	27.31 ± 8.04 ^{Aa}	14.07 ± 4.39 ^{Ab}	N/A
Hind intestine	ND	12.88 ± 4.61 ^{Aa}	13.44 ± 5.27 ^{Ab}	N/A

Data are mean ± S.E.M (n = 5/6). Data are expressed as surface area of tissue (cm²) for comparability to other published literature. There was no transepithelial uptake of Ag to the serosal saline. ND, not determined as the measured tissue concentration of total Ag was below the detection limit. N/A, not applicable to Ag₂S experiments. Different lower case letters denotes statistical difference between gut regions in the same treatment and saline (column). Different upper case letters denote statistical differences between treatments. There was no significant difference between fluid fluxes or moisture content. There were no statistically significant effects of chloride-free compared to the normal gut saline on the fluid flux or the uptake rates in the mucosa (One-Way ANOVA).